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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/903,055	07/11/2001	David N. Weise	M61.12-0349	9392

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EXAMINER
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RIVERO, MINERVA

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b> 09/903,055	<b>Applicant(s)</b> WEISE, DAVID N.	
	<b>Examiner</b> Minerva Rivero	<b>Art Unit</b> 2655	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 11 April 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-3,5-8,10,12-19,21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3,5-8,10,12-19,21 and 22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

1. In the Remarks submitted on 4/11/05, in response to the Office Action mailed on 02/07/05, the Applicant amended claims 1, 10 and 19, canceled claims 4, 9, 11 and 20, and submitted arguments for allowability of the pending claims.

### ***Claim Objections***

2. Claim 21 is objected to because of the following informalities: amended claim 21 depends upon canceled claim 20. Appropriate correction is required. The examiner has assumed this to be a typographical error and has taken the Applicant's intention to be having claim 21 dependent upon claim 19. The claim will be treated on the merits accordingly.

### ***Response to Arguments***

3. Applicant's arguments filed 4/11/05 with respect to claims 1-3, 5-8, 10, 12-19, and 21-22 have been fully considered but they are not persuasive.

4. In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by

Art Unit: 2655

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

In this case, regarding claims 1-3, 5-8, 10, 12-19, and 21-22 Applicant argues (pp. 7-10) that there is no suggestion to combine the teachings of *Su et al.* with those of *Kucera et al.*. The examiner cannot concur with the Applicant. *Kucera et al.* disclose a mutual information metric, which takes into account a class and context of a word (*collocational probability*, Col. 2, Lines 28-34), but does not disclose factoring in a phrase level for the node being evaluated in the aforementioned metric. *Su et al.* effectively remedy the deficiencies of *Kucera et al.* with respect to the aforementioned claims by disclosing considering the phrase level of a node in a syntactic metric; a conditional probability of a phrase level is calculated with respect to a previous phrase level (see Col. 13, Lines 22-44; Fig. 4). Accounting for the phrase level of a node or a phrasal context augments a *bottom-up parsing* metric, (e.g. a mutual information metric) and results in a more accurate parsing of the complete text sequence. [The examiner notes that *Su et al.* suggest employing a mutual information metric as part of the parsing process (*a conditional probability may be obtained for a syntactic score of a symbol based on its right and left contexts*, Col. 13, Lines 40-44).]

Art Unit: 2655

5. Regarding claims 1-3, 5-8, 10, 12-18, Applicant argues that *Su et al.* do not disclose the limitation of determining a mutual information score for a node using all possible word classes for a word in the text segment. The examiner refers the Applicant to Col. 17, Lines 47-66 (see Figure 7; Col. 11, Lines 46-50), wherein *Su et al.* disclose indicating all possible parts of speech for each word of a sentence to be parsed and calculating the corresponding probabilities for each.

6. In response to applicant's argument, with respect to claims 1-3 and 5-8, that there is no suggestion in either reference (*Su et al.* and *Kucera et al.*) that would show how the collocation probability of *Kucera et al.* could be modified to accommodate the phrase level of the nodes employed in *Su et al.*'s scoring function, the test for obviousness is not whether the features of a secondary reference may be bodily incorporated into the structure of the primary reference; nor is it that the claimed invention must be expressly suggested in any one or all of the references. Rather, the test is what the combined teachings of the references would have suggested to those of ordinary skill in the art. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981).

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

Art Unit: 2655

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-3 and 6-8 are rejected under 35 U.S.C. 102(b) as being anticipated by Su *et al.* (US Patent 5,418,717).

3. Regarding claim 1, Su *et al.* disclose a method of generating a score for a node identified during a parse of a text segment, the method comprising:

identifying a phrase level for the node (*decomposing sentence into phrase levels*, Col. 13, Lines 22-33);

identifying a word class for at least one word that neighbors a text spanned by the node (*analyzing input text for part-of-speech*, Col. 9, Lines 32-40; *examining words to the left and right of the current word*, Col. 9, Lines 44-49) and

generating a score by determining a mutual information metric based on the phrase level and the word class (*composite scores*, Col. 5, Lines 8-14; *syntactic score*, Col. 9, Lines 32-40 and Col. 13, Lines 34-37; *a conditional probability may be obtained for a syntactic score of a symbol based on its right and left contexts*, Col. 13, Lines 40-44)

4. Regarding claim 2, Su *et al.* disclose identifying a word class for a word to the left of the text spanned by the node and identifying a word class for a word to the right of

Art Unit: 2655

the text spanned by the node (*examining words to the left and right of the current word*, Col. 9, Lines 44-49).

5. Regarding claim 3, Su *et al.* disclose generating a score based on the phrase level of the node, the word class of the word to the right of the text spanned by the node and the word class of the word to the left of the text spanned by the node (*composite scores*, Col. 5, Lines 8-14; *syntactic score*, Col. 9, Lines 32-40 and Col. 13, Lines 34-37; *examining words to the left and right of the current word*, Col. 9, Lines 44-49).

6. Regarding claims 6 and 8, Su *et al.* further disclose identifying all possible word classes for at least one word, for a word to the left of the text spanned by the node and for a word to the right of the text spanned by the node (*part-of-speech, categories of prior words*, Col. 11, Lines 44-50; *examining words to the left and right of the current word*, Col. 9, Lines 44-49; *examining context information near the current word*, Col. 11, Lines 52-54).

7. Regarding claim 7, Su *et al.* disclose generating a score based in part on all of the identified word classes (*lexical score and probability of a word having a category or part-of-speech*, Col. 11, Lines 46-50).

Art Unit: 2655

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

9. Claims 5, 10, 12-19 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Su *et al.* ((US Patent 5,418,717) in view of Kucera *et al.* (US Patent 4,868,750).

10. Regarding claims 10 and 19, Su *et al.* further disclose a parser and computer-readable medium for generating a syntax structure from a text segment, comprising:

a seeding unit for inserting words from the text segment into a candidate list as nodes (*parsing using grammatical relevancy*, Col. 2, Lines 13-21; *storing candidates most likely to be correct*, Col. 6, Lines 6-9 and 11-17);

a node selector for promoting nodes from the candidate list to a node chart (*storing candidates most likely to be correct*, Col. 6, Lines 6-9 and 11-17);

a rule engine for combining nodes in the node chart to form a larger node (*parsing using grammatical relevancy*, Col. 2, Lines 13-21; *score function engine*, Col. 10, Lines 48-53, Fig. 3A, element 311) and



a metric calculator for generating a score for a node formed by the rule engine, the score being based in part on mutual information determined based on a phrase level of the node formed by the rule engine and at least one word in the text segment (scores *determined at node positions*, Col. 4, Lines 66-68; Col. 13, Lines 22-44; Fig. 4; a *conditional probability may be obtained for a syntactic score of a symbol based on its right and left contexts*, Col. 13, Lines 40-44) and

using the score for the syntax node when forming the full parse structure (generating and truncating syntax trees on the basis of node scores, Col. 4, Lines 61-68).

However, Su *et al.* do not disclose but Kucera *et al.* suggest the score being based in part on mutual information (*collocational probability*, Col. 2, Lines 28-34). [As evidenced by Lu *et al.* (US Patent 5,819,260), Col. 1, Line 65 – Col. 2, Line 2, *collocation information or mutual information.*]

Therefore it would have been obvious to one ordinarily in the art at the time of the invention to supplement the teachings of Su *et al.* with generating a score by determining a mutual information metric, as suggested by Kucera *et al.*, in order to have the adjacent words and context regarding the node affect the scoring process and produce a more accurate and complete node score.

11. Regarding claims 5, Su *et al.* do not disclose but Kucera *et al.* do disclose determining a mutual information metric comprises determining a mutual information

Art Unit: 2655

metric based on the phrase level of the node, the word class of the word to the right of the text spanned by the node and the word class of the word to the left of the text spanned by the node (*phrase identification*, Col. 3, Lines 3-11; *ranking per phrase boundaries*, Col. 25, Lines 27-33; *adjacent tags*, Col. 1, Lines 51-55; Col. 1, Line 65 – Col. 2, Line 3; *major class headers for tags*, Fig. 4).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of *Su et al.*, with determining a mutual information metric based on the phrase level of the code, the word class of the word to the right of the text spanned by the node and the word class of the word to the left of the text spanned by the node, as taught by *Kucera et al.*, in order to include relevant context information in the node score metric and thus ascertain a more accurate and complete node score.

12. Regarding claim 12, *Su et al.* do not but *Kucera et al.* do disclose the mutual information is determined based on a word class for a word in a text segment (*determining probable tags in order of likelihood*, Col. 1, Line 65 – Col. 2, Line 3; *major class headers for tags*, Fig. 4).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of *Su et al.* with determining the mutual information based on a word class for a word in a text segment, as disclosed by

Art Unit: 2655

Kucera *et al.*, in order to account for relevant grammatical information in the scoring procedure, thus resulting in a more accurate and informed node score.

13. Regarding claim 21, Su *et al.* disclose the mutual information score is further based on all possible word classes of a word in the text segment (*a conditional probability may be obtained for a syntactic score of a symbol based on its right and left contexts*, Col. 13, Lines 40-44; Col. 17, Lines 47-66, Figure 7; Col. 11, Lines 46-50).

14. Regarding claim 13, Su *et al.* do not disclose but Kucera *et al.* do disclose the mutual information is determined based on all possible word classes for a word in the text segment (*annotating each word with possible tags*, Col. 1, Line 65 – Col. 2, Line 3).

Therefore it would have been obvious to one ordinarily skilled in the art to supplement the teachings of Su *et al.* with having the mutual information determined based on all possible word classes for a word in a text segment, as taught by Kucera *et al.*, in order to achieve a better parsing result by considering all the reasonable word class possibilities.

15. Regarding claims 14-15 and 22, Su *et al.* do not disclose but Kucera *et al.* do disclose the mutual information is determined based on a word class for a word to the left/right of a set of words spanned by the node formed by the rule engine (*adjacent*

Art Unit: 2655

*tags*, Col. 1, Lines 51-55; Col. 1, Line 65 – Col. 2, Line 3; *major class headers for tags*, Fig. 4).

Therefore it would have been obvious to one ordinarily skilled in the art at the time of the invention to supplement the teachings of Su *et al.*, with determining a mutual information metric based on a word class for a word to the left/right of a set of words spanned by the node formed by the rule engine, as taught by Kucera *et al.*, in order to include relevant context information in the node score metric and thus ascertain a more accurate and complete node score.

16. Regarding claim 16, Su *et al.* further disclose a lexicon look-up for determining parts of speech for words in the text segment (Col. 5, Lines 65-68).

17. Regarding claim 17, Su *et al.* do not explicitly disclose but Kucera *et al.* do disclose the seeding unit inserts a node for each part of speech of each word in the text segment (*annotating each word with possible tags*, Col. 1, Line 65 – Col. 2, Line 3; *nodes*, Col. 2, Lines 43-46; *inserting tags in node structures*, Col. 26, Lines 25-28; Fig. 13, step 180).

18. Regarding claim 18, Su *et al.* further disclose the seeding unit inserts nodes representing the beginning of the text segment and the ending of the text segment (*terminal nodes*, Col. 13, Lines 26-31).

**Conclusion**

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

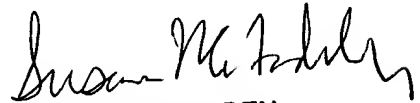
20. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Minerva Rivero whose telephone number is (571) 272-7626. The examiner can normally be reached on Monday-Friday 9:00 am - 6:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Talivaldis Ivars Smits can be reached on (571) 272-7628. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 2655

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MR 7/20/05

  
SUSAN MCFADDEN  
PRIMARY EXAMINER